small, and this circumstance appears to favour the view that a slow surface-reduction is in progress."

XII. "On the Values of the Integrals $\int_0^1 Q_n, Q_{n'}, d\mu, Q_n, Q_{n'}$ being Laplace's Coefficients of the Orders n, n', with an application to the Theory of Radiation." By the Hon J. W. Strutt, Fellow of Trinity College, Cambridge. Communicated by W. Spottiswoode, F.R.S. Received May 17, 1870.

(Abstract.)

These integrals present themselves in calculations dealing with arbitrary functions on the surface of a sphere which vary discontinuously in passing from one hemisphere to the other. When n, n' are both even or both odd, the values of the integrals may be immediately inferred from known theorems in which the integration extends from -1 to $+1$, or over the whole sphere; otherwise a special method is necessary. In the present paper a function of two variables is investigated, which, when expanded, has for coefficients the quantities in question. As an example of the method, the problem is taken of a uniform conducting sphere exposed to the heat proceeding from a radiant point. It will appear at once that the heat received by any element of the surface is expressed by different analytical functions on the two hemispheres—a source of discontinuity which renders necessary a special treatment of the problem. The solution is afterwards generalized to meet the case of a sphere exposed to any kind of radiation from a distance.

One remarkable result not confined to the sphere is, that the effect of a radiation which is expressed by one or more harmonic terms of odd order is altogether nil, with the single exception of the term of the first order.

XIII. "Note on the Construction of Thermopiles." By the Earl of Rosse, F.R.S. Received June 14, 1870.

Although in the measurement of small quantities of radiant heat by means of the thermopile much may be done towards increasing the sensibility of the apparatus by carefully adjusting the galvanometer and rendering the needle as nearly astatic as possible, there must necessarily be some limit to this, and it therefore appears desirable that the principles on which thermopiles of great sensibility can be constructed should also be carefully attended to.

With the view of obtaining a pair of thermopiles of greater sensibility and of more equal power than I had been able to procure ready made, I made a few experiments with various forms of that instrument, and I was led to the conclusion (one which might have been foreseen) that the